

AMENDMENTS TO THE DRAWINGS

The attached drawing sheets include Figure 4 as designated by "Prior Art", and replace the original sheet which inadvertently omits such a legend.

Attachment: A Replacement sheet

REMARKS/ARGUMENTS

Applicant would like to thank the Examiner for the careful consideration given the present application. The application has been carefully reviewed in light of the Office action, and amended as necessary to more clearly and particularly describe the subject matter that Applicant regards as the invention.

Reconsideration of the subject patent application in view of the present remarks is respectfully requested.

An applicant initiated a telephone interview on June 9, 2008. Examiner Steven Raris, and Applicant's attorney Nobuhiko Sukenaga participated in the interview. Claims 1 and 6 were discussed during the interview, along with the cited Parks (4,866,247) and Ogasawara (4,546,234). Applicant's attorney proposed an amendment to claims 1 and 6, and argued that neither Parks nor Ogasawara discloses controlling the welding output current just after arc recurrence to be higher than a peak current of a welding output current in the short circuit period for a set given period. The Examiner took a position that Fig. 2 of Ogasawara seems different from the above limitation, but Fig. 3 of Parks seems similar to the above limitation. Applicant's attorney argued that Fig. 3 of Parks is merely an example, and Parks does not disclose to control the welding output current just after arc recurrence to be higher than a peak current in the short circuit period. The Examiner stated that he has to look at the Applicant's amendment and response.

Claims 1, 3-4, 6, 9-10 and 12-13 are amended.

Claims 2 and 8 are cancelled.

New claims 14 and 15 are added.

The drawings are objected to because Figure 4 is to be labeled as "Prior Art". The drawing is amended herein to provide such a label. No new matter is entered by the amendment.

The documents "L", "N" and "P" in IDS are not considered because the copies of these documents have not been received. Copies of the references should have been provided by the International Bureau. For the examiner's convenience, copies of the references are provided along with a clean copy of form 1449. Applicants request the examiner's confirmation that the references have been considered.

Claims 1-5 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Parks et al. (4,866,247; hereinafter "Parks").

Claim 2 has been cancelled. Thus, the rejection as it applies to claim 2 is moot.

Regarding claim 1, Parks states that "The plasma boost current pulse 100 has a fixed time T3-T4 and the plasma current pulse 110 is terminated at time T5. In accordance with the invention, the energy provided for the welding operation during pulses 100, 110 is constant." (see column 10, lines 9-13). Parks also states that "In the preferred embodiment, leading edge 102 of pulse 100 is essentially vertical and portion 104 is horizontal," (see column 10, lines 43-

45). Therefore, it should be said that the portion 104 in Fig. 2 is fixed without relation to the current in the PINCH period.

In accordance with the above configuration, Parks does not teach or suggest to control that the welding output current just after arc recurrence to be higher than a peak current of a welding output current in the short circuit period, recited in claims 1 and 6 of the present invention.

In the short-circuit welding for repeating the welding cycle between the short circuit and the opening, it is obvious that the short circuit period (PINCH period between T2 and T3 in Fig. 2 of Parks) of each welding cycle is not fixed, but varies by the cycle. That is, the short circuit period (PINCH period) may be shorter or longer depending on the situation.

Parks states that "The pulse width modulator attempts to limit the current magnitude as illustrated in the PINCH portion of Fig. 2. The illustrated and preferred embodiment has two distinct slopes." (see column 9, lines 7-10). Therefore, when the PINCH portion (term) is longer, the peak current becomes higher in the PINCH portion, thereby sometimes causing the peak current higher than the portion 104 in cases. Fig. 2 of Parks merely shows an example where the portion 104 in the plasma boost happens to be higher than the peak current in short circuit period due to the short term of the short circuit period (PINCH portion). Therefore, Parks does not disclose that the welding output current just after arc recurrence is controlled to be higher than a peak current of a welding output current in the short circuit period, recited in claims 1 and 6 of the present invention.

In addition, claims 3, 4, 5 and 12 recite that the welding output current just after arc recurrence is controlled to have an intended value found by some calculation and the like (adding a given value, multiplying by a given magnification, setting a fixed value, etc.) as specific examples. The Examiner states that since the current levels are controlled to be specific values, they will inherently have the arithmetic and multiplicative relationships in page 2 and 3 of the Office Action. However, according to the above mentioned reasons, since the portion 104 in Fig. 2 is fixed without relation to the current in the PINCH period, it is obvious that Parks does not disclose the features recited in those claims.

Therefore, since every limitation of claim 1 is not taught by the reference, claim 1 is not fully anticipated by Parks. Thus, withdrawal of the rejection as it applies to claim 1 is respectfully requested.

Claims 3-5 and 12 which are dependent from claim 1 should also be allowable for at least the same reason.

Claims 1-5 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Ogasawara et al. (4,546,234; hereinafter "Ogasawara").

Claim 2 has been cancelled. Thus, the rejection as it applies to claim 2 is moot.

Regarding claim 1, as shown in Fig. 3 of Ogasawara, there is no disclosure that the welding output current just after arc recurrence to be higher than a peak current of a welding output current in the short circuit period, recited in claims 1 and 6 of the present invention.

Therefore, since every limitation of claim 1 is not taught by the reference, claim 1 is not fully anticipated by Ogasawara. Thus, withdrawal of the rejection as it applies to claim 1 is respectfully requested.

Claims 3-5 and 12 which are dependent from claim 1 should also be allowable for at least the same reason.

Claims 6-11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hsu (6,002,104) taken with Parks.

Claim 8 has been cancelled. Thus, the rejection as it applies to claim 8 is moot.

Regarding claim 6, neither Hsu nor Parks discloses, teaches or render foreseeable that the arc initial control part controls a welding current at an arc recurrence time in the arc initial control time set by the timer part to be higher than a peak current of the welding current in the short circuit period. Hsu does not disclose the above fact, as admitted by the Examiner in the Office Action. The Office Action states that it would have been obvious to have implemented the waveform claimed, the reason being the teaching of Parks that such is a conventional current waveform for welding. However, the current waveform disclosed in Parks is merely an example where the portion 104 in the plasma boost happens to be higher than the peak current in short circuit period due to the short term of the short circuit period (PINCH portion). Parks does not teach or suggest to control that the welding output current just after arc recurrence to be higher than a peak current of a welding output current in the short circuit period, recited in claim 6 of the present invention. Accordingly, the combination of Hsu and Parks does not meet all of the limitations of claim 6, since the combined machine would not have a function that the arc initial

control part controls a welding current in such a manner as described above. Therefore, the asserted combination of Hsu and Parks does not render claim 6 obvious. Thus, withdrawal of the rejection as it applies to claim 6 is respectfully requested.

Claims 7, 9-11 and 13 which are dependent from claim 1 should also be allowable for at least the same reason.

Regarding new claims 14 and 15, none of Parks, Ogasawara and Hsu discloses controlling a welding output current just after arc recurrence to be constantly higher than a welding output current just before arc recurrence for a set given period starting from arc recurrence.

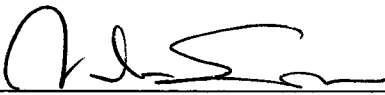
In consideration of the foregoing analysis, it is respectfully submitted that the present application is in a condition for allowance and notice to that effect is hereby requested. If it is determined that the application is not in a condition for allowance, the examiner is invited to initiate a telephone interview with the undersigned attorney to expedite prosecution of the present application.

Appl. No. 10/568,317
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If there are any additional fees resulting from this communication, please charge same to our Deposit Account No. 16-0820, our Order No. NGB-39709.

Respectfully submitted,

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